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09/574,735	05/18/2000	Lieven DeVeylder	2283/301	1507

7590 10/29/2004
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EXAMINER

COLLINS, CYNTHIA E

ART UNIT	PAPER NUMBER
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1638

DATE MAILED: 10/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/574,735

Applicant(s)

DEVEYLDER ET AL.

Examiner

Cynthia Collins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,5,7-11,14,17,21,24,25,27,30,36-41,43-45,47-50 and 52-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 5, 7-11, 14, 17, 21, 24-25, 27, 30, 36-41, 43-45, 47-50 and 52-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. 7/04.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 19, 2004 has been entered.

Claims 1, 3-4, 6, 12-13, 15-16, 18-20, 22-23, 26, 28-29, 31-35, 42, 46, 51 and 58-59 are cancelled.

Claims 2, 5, 7, 11, 14, 17, 21, 25, 27, 30, 36, 45, 50, 54 and 55 are currently amended.

Claims 2, 5, 7-11, 14, 17, 21, 24-25, 27, 30, 36-41, 43-45, 47-50 and 52-57 are pending and are examined.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

All previous objections and rejections not set forth below have been withdrawn.

Claim Rejections - 35 USC § 112

Claims 2, 5, 7, 11, 14, 17, 21, 25, 27, 30, 36, 54 and 55, and claims 8-10, 24, 37-41, 43-45, 47-50, 56 and 57 dependent thereon, remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled

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in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention, for the reasons set forth below.

Applicant's arguments filed May 27, 2004 have been fully considered but they are not persuasive.

In response to the previous new matter rejection of claims 2, 5, 7, 11, 14, 17, 21, 25, 27, 30, 36, 54 and 55, Applicants point out that, as presently amended, claims 2, 5, 7, 11, 14, 17, 21, 25, 27, 30, and 36 no longer recite "or any of the aforementioned amino acid sequences having one mismatch at any position." These claims presently recite in relevant part: "wherein the CKI comprises an amino acid sequence as set forth in SEQ ID NO:34 or an amino acid sequence that is at least 70% identical thereto, and an amino acid sequence as set forth in SEQ ID NO:35 or an amino acid sequence that is at least 70% identical thereto, and an amino acid sequence as set forth in SEQ ID NO:36 or an amino acid sequence that is at least 70% identical thereto."

Applicants also point out that literal support for the above-quoted recitation may be found throughout the specification, e.g., page 54, last three lines, to page 55, line 7. Further, in response to the previous written description rejection of claims 2, 5, 7, 11, 14, 17, 21, 25, 27, 30, 36, 54 and 55, Applicants point out that the claims have been amended with respect to which conserved amino acid motifs the plant cyclin-dependent kinase inhibitors comprise. (reply pages 15-16)

The Examiner acknowledges that claims 2, 5, 7, 11, 14, 17, 21, 25, 27, 30, and 36 no longer recite "or any of the aforementioned amino acid sequences having one mismatch at any position.", and the new matter rejection is hereby withdrawn. The Examiner also acknowledges the amendment of the claims with respect to which conserved amino acid motifs the plant cyclin-dependent kinase inhibitors (CKIs) comprise, and acknowledges that the current claim

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amendments address the concerns previously raised by the Examiner with respect to which conserved amino acid motifs the plant cyclin-dependent kinase inhibitors comprise.

The rejection is maintained, however, because plant CKIs that comprise amino acid sequences at least 70% identical to the disclosed conserved amino acid motifs (SEQ ID NOS:34-39) are not adequately described, literal support for the recitation of at least 70% identical thereto notwithstanding. While some of the disclosed plant CKI amino acid sequences which are the basis for the conserved amino acid motifs of SEQ ID NOS:34-39 exhibit some variation (1-2 specific amino acids) in these motifs, they only exhibit variation at specific positions in each motif (Table 2). Further, SEQ ID NO:38 does not vary at any position, SEQ ID NO:34 may specifically vary at one of two positions, SEQ ID NO:35 may specifically vary at one of two positions, SEQ ID NO:36 may specifically vary at one of two positions, SEQ ID NO:37 may specifically vary at one of two positions, and SEQ ID NO:39 may specifically vary at three positions, whereas plant CKIs that comprise amino acid sequences at least 70% identical to the disclosed conserved amino acid motifs of SEQ ID NOS:34-39 would comprise 2 to 3 unspecified amino acids at any unspecified position in each motif. Neither the specification nor the prior art describe plant CKIs that comprise 2 to 3 unspecified amino acids at any unspecified position in each motif. Applicant has not described a representative number of species falling within the scope of the claimed genus which encompasses plant CKIs that comprise 2 to 3 unspecified amino acids at any unspecified position in each of the conserved amino acid motifs of SEQ ID NOS:34-39, nor the structural features unique to the genus.

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Applicants additionally request consideration of the declaration under 35 U.S.C. §1.132, executed by Dr. Wim J.F. Van Camp, attesting to a reasonable interpretation of the data and consensus sequences presented in Table 2 of the present application (reply page 17).

It is asserted in ¶7 of the declaration that one skilled in the art, having the present application in hand and reflecting upon Table 2, would reasonably understand that the seven different *Arabidopsis* ICKS (inhibitors of cyclin dependent kinases i.e. cyclin-dependent kinase inhibitors or CKIs) as well as *Chenopodium* and alfalfa ICKS listed therein, each contain the consensus sequences SEQ ID NO:34, SEQ ID NO:35, and SEQ ID NO:36, albeit some of the ICKS have one or more amino acid substitutions when directly compared to a particular consensus sequence. It is also asserted in ¶7 of the declaration that reliable identification of a consensus sequence within a larger sequence often occurs when the consensus sequence is not a perfect match to the published or known consensus sequence, and that the fact that a consensus sequence located within a larger sequence, does not perfectly match a known or published consensus sequence does not diminish in any way, such identification. It is also asserted in ¶8 of the declaration that the present application provides a teaching with particularity of the principles described in paragraph 7, with respect to the consensus sequences SEQ ID NOs: 34-39, specifically, at page 54, line 12 to page 55, line 18. (declaration pages 2-3)

The Examiner maintains that a reasonable understanding by one skilled in the art that a reliable identification of a consensus sequence within a larger sequence can occur when the consensus sequence is not a perfect match to the published or known consensus sequence does not substitute for an actual description of the amino acid sequences of plant CKI consensus sequences because one skilled in the art would not know on the basis of the disclosure which of

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the 20 different amino acid residues would occupy which of the eight to ten available positions in each of the recited motifs that plant CKIs comprise, as the specification discloses only a limited number of amino acid substitutions that may occur at a limited number of positions within each motif.

It is additionally asserted in ¶9 of the declaration that the record is replete with examples of ICKS from different plants, containing the consensus sequences identified in this application being used to decrease cyclin-dependent kinase activity in plants with the resultant phenotypic changes as presently claimed, and that many of the different ICKS listed in Table 2, having either a perfect match to consensus sequences SEQ ID No: 34, SEQ ID NO:35 and SEQ ID NO:36, listed therein, or having one mismatch (substitution) or alternatively characterized as being at least 70% identical to the consensus sequences SEQ ID No: 34, SEQ ID NO:35 and SEQ ID NO:36, have been submitted to the Examiner as actual exemplifications of the presently claimed invention. (declaration pages 3-4)

The Examiner maintains that the specification discloses only a limited number of amino acid substitutions that may occur at a limited number of positions within each motif.

For SEQ ID NO:34, only two of the nine disclosed plant CKIs have a consensus sequence that varies from the consensus sequence of SEQ ID NO:34, and each varies by only one amino acid at two different locations (ICK2 having a consensus sequence of SEQ ID NO:34 wherein the amino acid C is substituted for the amino acid F at position 1 and ICK7 having a consensus sequence of SEQ ID NO:34 wherein the amino acid Y is substituted for the amino acid F at position 7). Further, only two of the nine disclosed plant CKIs have a consensus sequence that is

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less than 100% identical to the consensus sequence of SEQ ID NO:34 (ICK 2 and ICK7 having a consensus sequence 88 % identical to SEQ ID NO:34).

For SEQ ID NO:35, only four of the nine disclosed plant CKIs have a consensus sequence that varies from the consensus sequence of SEQ ID NO:35, and each varies by only one amino acid at two different locations (ICK4 having a consensus sequence of SEQ ID NO:35 wherein the amino acid F is substituted for the amino acid Y at position 6, ICK6 having a consensus sequence of SEQ ID NO:35 wherein the amino acid K is substituted for the amino acid E at position 7, ICK7 having a consensus sequence of SEQ ID NO:35 wherein the amino acid Q is substituted for the amino acid E at position 7, and *Chenopodium* ICK having a consensus sequence of SEQ ID NO:35 wherein the amino acid D is substituted for the amino acid E at position 7). Further, only four of the nine disclosed plant CKIs have a consensus sequence that is less than 100% identical to the consensus sequence of SEQ ID NO:35 (ICK 4, ICK6, ICK7 and *Chenopodium* ICK having a consensus sequence 88 % identical to SEQ ID NO:35).

For SEQ ID NO:36, only three of the nine disclosed plant CKIs have a consensus sequence that varies from the consensus sequence of SEQ ID NO:36, and each varies by only one amino acid at two different locations (Alfalfa ICK having a consensus sequence of SEQ ID NO:36 wherein the amino acid C is substituted for the amino acid F at position 6, ICK4 having a consensus sequence of SEQ ID NO:36 wherein the amino acid D is substituted for the amino acid E at position 3, and ICK7 having a consensus sequence of SEQ ID NO:36 wherein the amino acid D is substituted for the amino acid E at position 3). Further, only three of the nine disclosed plant CKIs have a consensus sequence that is less than 100% identical to the consensus

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sequence of SEQ ID NO:36 (Alfalfa ICK, ICK4 and ICK7 having a consensus sequence 90 % identical to SEQ ID NO:36).

For SEQ ID NO:37, of the six disclosed plant CKIs that have this consensus sequence only two have a consensus that varies from the consensus sequence of SEQ ID NO:37, and each varies by only one amino acid at two different locations (Alfalfa ICK having a consensus sequence of SEQ ID NO:37 wherein the amino acid N is substituted for the amino acid r at position 6, and *Chenopodium* ICK having a consensus sequence of SEQ ID NO:37 wherein the amino acid I is substituted for the amino acid Y at position 1). Further, of the six disclosed plant CKIs that have this consensus sequence only two have a consensus sequence that is less than 100% identical to the consensus sequence of SEQ ID NO:37 (Alfalfa ICK and *Chenopodium* ICK having a consensus sequence 88 % identical to SEQ ID NO:37).

For SEQ ID NO:38, of the four disclosed plant CKIs that have this consensus sequence none have a consensus that varies from the consensus sequence of SEQ ID NO:38. Further, of the four disclosed plant CKIs that have this consensus sequence all have a consensus sequence that 100% identical to the consensus sequence of SEQ ID NO:38.

For SEQ ID NO:39, of the four disclosed plant CKIs that have this consensus sequence only two have a consensus that varies from the consensus sequence of SEQ ID NO:39, and each varies by only one or two amino acid at three different locations (ICK4 having a consensus sequence of SEQ ID NO:39 wherein the amino acid L is substituted for the amino acid R at position 5, and ICK5 having a consensus sequence of SEQ ID NO:39 wherein the amino acid A is substituted for the amino acid S at position 1 and wherein the amino acid F is substituted for the amino acid V at position 4). Further, of the four disclosed plant CKIs that have this

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consensus sequence only two have a consensus sequence that is less than 100% identical to the consensus sequence of SEQ ID NO:39 (ICK 4 having a consensus sequence 88 % identical to SEQ ID NO:39, and ICK 5 having a consensus sequence 75 % identical to SEQ ID NO:39).

The declaration at ¶10 also points, for example, to the specific ICKS listed in Table 2 (declaration page 4), and the declaration at ¶11-14 points, for example, to a description of experiments related to decreased seed size, an embodiment of the invention recited in e.g., claims 30 and 47 of the present application, said experiments utilizing the *Arabidopsis* plant CKI ICK7 and the rice plant CKI ICK 2. It is also asserted in ¶12 of the declaration that in the *Arabidopsis* plant CKI ICK7, each of the three consensus sequences present in the amino acid sequence of ICK7 has one mismatch, or is at least 70% identical to, the corresponding consensus sequence listed in the bottom line of Table 2, i.e., SEQ ID NO:34, SEQ ID NO:35, and SEQ ID NO:36. It is additionally asserted in ¶14 of the declaration that consensus sequences having at least 70% identity to the amino acid sequences set forth in SEQ ID NOs: 34, 35, and 36 and present in the corresponding rice amino acid sequence were used to identify the rice CDNA as encoding an ICK. The declaration at ¶14 also points out that the rice plant CKI ICK 2 is not listed in Table 2 nor provided by the present application as it was identified after the present application was filed. (declaration pages 4-5)

With respect to the *Arabidopsis* plant CKI ICK7, the Examiner maintains that the disclosure of the *Arabidopsis* plant CKI ICK7 sequence supports the description of plant CKIs having a consensus sequence of SEQ ID NO:34 wherein the amino acid Y is substituted for the amino acid F at position 7, a consensus sequence of SEQ ID NO:35 wherein the amino acid Q is

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substituted for the amino acid E at position 7, and a consensus sequence SEQ ID NO:36 wherein the amino acid D is substituted for the amino acid E at position 3, as set forth in Table 2 and the sequence listing. The Examiner further maintains that the disclosed *Arabidopsis* plant CKI ICK7 has a consensus sequence 88 % identical to SEQ ID NO:34, a consensus sequence 88% identical to SEQ ID NO:35, and a consensus sequence 90% identical to SEQ ID NO:36. With respect to the rice plant CKI ICK 2, the Examiner maintains that the rice plant CKI ICK 2 cannot support the description of the plant CKIs recited in the claims because the rice plant CKI ICK 2 was identified after the present application was filed, and the written description requirement must be met at the time of filing.

It is asserted in ¶15 of the declaration that the preceding paragraphs and attached exhibits demonstrate that Applicants were in possession of the claimed invention at the time the application was first filed. (declaration page 5)

The Examiner maintains that an assertion that Applicants were in possession of plant CKIs that comprise amino acid sequences at least 70% identical to the disclosed conserved amino acid motifs of SEQ ID NOS:34-39 does not substitute for a description of amino acid sequences at least 70% identical to the disclosed conserved amino acid motifs of SEQ ID NOS:34-39, because a showing of possession alone does not satisfy the written description requirement. See *Enzo Biochem Inc. v. Gen-Probe Inc.*, 63 USPQ2d 1609, 1617:

Application of the written description requirement, however, is not subsumed by the “possession” inquiry. A showing of “possession” is ancillary to the *statutory* mandate that “[t]he specification shall contain a written description of the invention,” and that requirement is not met if, despite a showing of possession, the specification does not adequately describe the claimed invention. After all, as indicated above, one can show possession of an invention by means of an affidavit or declaration during prosecution, as

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one does in an interference or when one files an affidavit under 37 C.F.R. § 1.131 to antedate a reference. However, such a showing of possession alone does not cure the lack of a written description in the specification, as required by statute.

Claims 2, 5, 7, 11, 14, 17, 21, 25, 27, 30, 36, 54 and 55, and claims 8-10, 24, 37-41, 43-45, 47-50, 56 and 57 dependent thereon, are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for methods of using a nucleotide sequence encoding a plant cyclin-dependent kinase inhibitor which binds a plant cyclin-dependent kinase having a PSTAIRE cyclin-binding motif wherein the CKI comprises an amino acid sequence as set forth in SEQ ID NO:34, SEQ ID NO:35 and SEQ ID NO:36 and wherein the CKI further comprises the consensus amino acid sequence of SEQ ID NO:37 or SEQ ID NO:37 or SEQ ID NO:38, does not reasonably provide enablement for methods of using a nucleotide sequence encoding a plant cyclin-dependent kinase inhibitor which binds a plant cyclin-dependent kinase having a PSTAIRE cyclin-binding motif wherein the CKI comprises an amino acid sequence that is at least 70% identical to SEQ ID NO:34, SEQ ID NO:35 and SEQ ID NO:36 and wherein the CKI further comprises a consensus amino acid sequence that is at least 70% identical to SEQ ID NO:37 or SEQ ID NO:37 or SEQ ID NO:38. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The full scope of the claimed invention is not enabled because the functional effect of altering an amino acid consensus sequence is unpredictable, since the functionality of an amino acid consensus sequence may depend on the presence of particular amino acids at particular positions in the consensus sequence.

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See, for example, Faustinella F et al. (Structural and functional roles of highly conserved serines in human lipoprotein lipase. Evidence that serine 132 is essential for enzyme catalysis. *J Biol Chem.* 1991 May 25;266(15):9481-5), who teach that some amino acid substitutions involving each of eight conserved serine residues of human lipoprotein lipase inactivate its enzymatic activity and some do not. Substitution of the amino acid T, A or D for the amino acid S at position 132 in a consensus sequence of human lipoprotein lipase totally inactivate enzymatic activity, whereas substitution of the amino acid T, A or D for the amino acid S at position 172 in a consensus sequence of human lipoprotein lipase did not totally inactivate enzymatic activity, although substitution of the amino acid G for the amino acid S at position 172 did totally inactivate enzymatic activity (abstract; page 9483 Figure 1). Furthermore, while substitution of the amino acid A or T for the amino acid S at position 132 in a consensus sequence of human lipoprotein lipase totally inactivates enzymatic activity, substitution of the amino acid A for the amino acid S at position 244 in a consensus sequence of human lipoprotein lipase did not significantly reduce enzymatic activity as compared to cells transfected with the wild-type sequence, whereas substitution of the amino acid T for the amino acid S at position 244 did significantly reduce enzymatic activity (abstract; page 9483 Figure 1).

See also, for example, Ogata S et al. (Identification of the active site residues in dipeptidyl peptidase IV by affinity labeling and site-directed mutagenesis. *Biochemistry.* 1992 Mar 10;31(9):2582-7), who teach that different types of amino acid substitutions in a consensus sequence of dipeptidyl peptidase IV have different effects on enzyme activity. Substitution of the amino acid A or R for the amino acid G at position 629, substitution of the amino acid A for the amino acid S at position 631, and substitution of the amino acid A or S for the amino acid G at

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position 633, resulted in a complete loss of enzyme activity and DFP binding, whereas substitution of the amino acid E for the amino acid W at position 630 had no effect on enzyme activity (abstract; page 2585 Table II). While substitution of the amino acid L or G for the amino acid Y at position 632 resulted in a complete loss of enzyme activity, substitution of the amino acid F for the amino acid Y at position 632 had no effect on enzyme activity (abstract; page 2585 Table II).

See additionally, for example, Zhu JK et al. (Isoprenylation of the plant molecular chaperone ANJ1 facilitates membrane association and function at high temperature. *Proc Natl Acad Sci U S A*. 1993 Sep 15;90(18):8557-61), who teach that different types of amino acid substitutions in a consensus sequence that functions in protein isoprenylation have different effects. Substitution of the amino acid S for the amino acid C in the CAQQ motif of ANJ1 eliminated isoprenylation of ANJ1, a higher plant homolog of the bacterial molecular chaperone DnaJ, whereas substitution of the amino acid L for the terminal amino acid Q did not result in the expected geranylgeranylation of ANJ1 as occurs with mammalian proteins containing a carboxyl-terminal L residue in a similar motif (abstract; page 8560 Figure 4).

In the instant case the specification does not provide sufficient guidance with respect to which of the 20 different amino acids may be substituted at which of the eight to ten different positions of each conserved amino acid motifs of SEQ ID NOS:34-39 such that the resultant plant CKI retains its ability to bind a plant cyclin-dependent kinase having a PSTAIRE cyclin-binding motif and retains its ability to produce the phenotypic effects recited in the claims (decrease cyclin dependent kinase activity in a regenerated plant, increase CKI level in a plant cell, increase plant cell size, decrease plant cell number in a regenerated plant, increase leaf

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serration in a regenerated plant, increase stomata size in a regenerated plant, reduce petal size in a regenerated plant, reduce leaf veination in a regenerated plant, decrease endoreduplication and ploidy level in a plant cell and reduce plant seed size in a regenerated plant). Absent such guidance one skilled in the art would have to isolate from undisclosed sources and/or synthesize numerous different nucleic acid molecules encoding polypeptides comprising variants of SEQ ID NOS:34-39 that meet the structural limitations set forth in the claims, and then test each nucleic acid molecule for its ability to produce a plant CKI that binds a plant cyclin-dependent kinase having a PSTAIRE cyclin-binding motif and for its ability to produce the phenotypic effects recited in the claims in order to discriminate between those nucleic acid molecules that encode plant CKIs exhibiting the required functional attributes and those that do not. Such a trial and error approach to practicing the claimed invention would constitute undue experimentation.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 2, 5, 7-11, 14, 17, 21, 24-25, 27, 30, 36-41, 43-45, 47-50 and 52-57 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable

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over claims 1-26 of U.S. Patent No. 6,710,227, issued March 23, 2004 from U.S. Application No. 09/526,597. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-26 of U.S. Patent No. 6,710,227 are directed to transgenic plants and plant cells comprising an isolated DNA sequence encoding the *Arabidopsis* cyclin-dependent kinase inhibitor CKI2 (KRP2, ICK2) which binds the *Arabidopsis* cyclin-dependent kinase CDC2aAt, and to methods of making said transgenic plants and plant cells, whereas claims 2, 5, 7-11, 14, 17, 21, 24-25, 27, 30, 36-41, 43-45, 47-50 and 52-57 of the instant application are directed to a broader genus of transgenic plants comprising a nucleotide sequence encoding a cyclin-dependent kinase inhibitor which binds a plant cyclin-dependent kinase inhibitor having a PSTAIRE cyclin-binding motif, and to methods of transforming transgenic plants with said nucleotide sequence.

The Office acknowledges Applicant's statement filed November 19, 2003 in response to the prior provisional rejection of claims 2, 5, 7-11, 14, 17, 21, 24-25, 27, 30, 36-41, 43-45, 47-50 and 52-57 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 9, 13-19, 21-23, 43-48 and 51-52 of copending Application No. 09/526,597, now U.S. Patent No. 6,710,227, submitting that a terminal disclaimer will be submitted upon allowance of the claims presently under consideration in this application.

Claim 2, 5, 7-11, 14, 17, 21, 24-25, 27, 30, 36-41, 43-45, 47-50 and 52-57 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4-9 and 13-23 of copending Application No. 10/688,291. Although the conflicting claims are not identical, they are not patentably distinct from each other

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because claims 1, 4-9 and 13-23 of copending Application No. 10/688,291 are directed to DNA sequences encoding specific species of plant cyclin-dependent kinase inhibitors as well as plants and cells comprising said sequences and methods of using said sequences to transform plants whereas claims 2, 5, 7-11, 14, 17, 21, 24-25, 27, 30, 36-41, 43-45, 47-50 and 52-57 of the instant application are directed to a broader genus of transgenic plants comprising a nucleotide sequence encoding a cyclin-dependent kinase inhibitor which binds a plant cyclin-dependent kinase inhibitor having a PSTAIRE cyclin-binding motif, and to methods of transforming transgenic plants with said nucleotide sequence.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Remarks

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Collins whose telephone number is (571) 272-0794. The examiner can normally be reached on Monday-Friday 8:45 AM -5:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on (571) 272-0804. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cynthia Collins

 10/28/04